ANNUAL REPORT

OF THE

PROFESSOR

OF

Hygiene AND Physical Education.

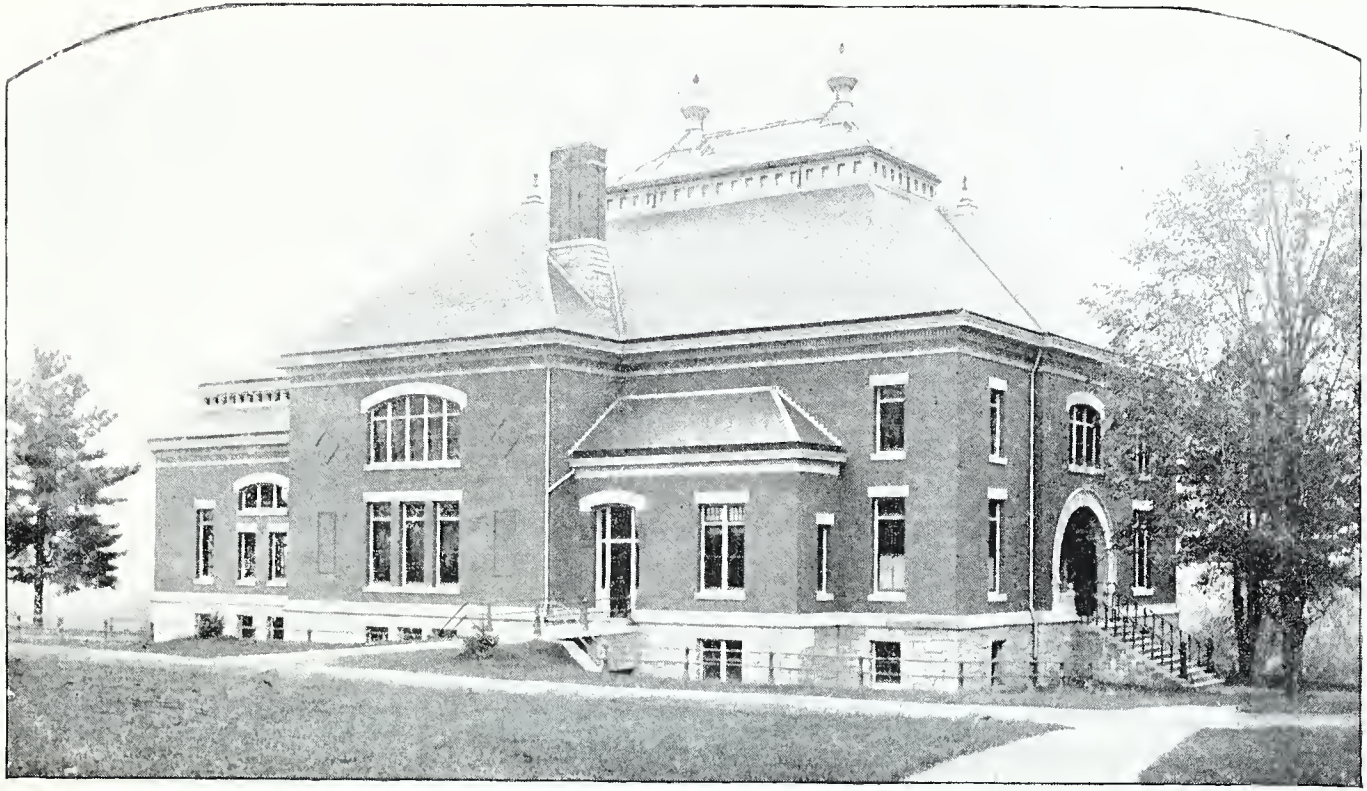
TO THE

Trustees of Amherst College.

JUNE 23, 1891.

Digitized by the Internet Archive
in 2017 with funding from
This project is made possible by a grant from the Institute of Museum and Library Services as administered by the Pennsylvania Department of Education through the Office of Commonwealth Libraries

https://archive.org/details/thirtiethannualr00amhe



THE PRATT GYMNASIUM.

From
"The Handbook of Amherst."

Copyright, 1891,
By Frederick H. Hitchcock.

To the Trustees of Amherst College.

THE

THIRTIETH ANNUAL REPORT

OF THE

PROFESSOR

OF

Hygiene AND Physical Education.

JUNE 23, 1891.

"The mind has no right to build itself up at the expense of the body: it is no more justifiable in abandoning itself without restraint to its cravings, than the body in yielding itself to sensual indulgence."—*Dr. W. Matthews.*

AMHERST, MASS.:
PRESS OF CARPENTER & MOREHOUSE.
1891.

THIRTY YEARS REPORT.

GENTLEMEN :—

I hereby present to you the thirtieth annual report of the Professor of Hygiene and Physical Education in Amherst College.

The department has outlived its experimental stage. It has survived many dark and doubtful days. But lately, and for the past six years especially, the fact has seemed increasingly evident that physical education has come here, and in pedagogy everywhere, to claim a rightful place, and to stay. As Amherst College was the pioneer in the movement, without doubt its Board of Trustees will feel special pride in whatever success it may have attained.

I.

At this, one of the mile-posts of the College, just as our young and strong President Gates begins his administration, it seems eminently fitting to mention some of the special friends of this department.

Its first, last, and best friends have been the Trustees of the College. Never have they, as a body or individually, opposed any propositions looking to the growth of the department or to supply its necessities. Nor this alone; they have always voted every dollar of money, and every other assistance and encouragement, that have been asked for by those who are working for the department. It will not be invidious, I trust, where all are regarded as warm friends, to mention the special counsel and advice and wisdom of President Stearns, Dr. Ebenezer Alden, Dr. Nathan Allen, Henry Ward Beecher, and Dr. E. Winchester Donald, whose helpfulness has been a fundamental fact in our history beyond the power of the newspaper reporter to find out.

There are other men, too, whose care and direction, though not officially connected with its affairs, have helped to build up and elab-

orate the department. Of these I may first mention our venerable and still active Professor W. S. Tyler, who was a most efficient helper and projector in the new cause of Physical Education. In the early history of our work his counsel and labor with outside friends of the college told greatly. Dr. Benjamin Barrett entered *con amore* into this work in its very early existence. He infused life into the new enterprise by the largest gift of money that the "old Gym." had received, and later by the gift of furniture and appliances for the interior of it; by the setting out, with his own hands, of trees which to this day bless his memory; and by the endowment known as the Barrett Fund for the supply of light gymnastic apparatus. Professor, Colonel, and President W. S. Clark was one of the efficient and early friends of this phase of education. The zeal and enthusiasm which characterized the man everywhere and always, he threw into collecting funds for and starting this new enterprise. He was also one of the building committee of the Barrett Gymnasium. Other men who were most efficient with time and money in giving a start to the department are here commemorated, though their names cannot all be mentioned.

The financial foundations of the department are very noteworthy, as also the various gifts of money to sustain, encourage and develop its systematic work since its establishment.

Of the financial supporters, first in order of time may be mentioned the late Hon. E. H. Sawyer, of Easthampton, Mass. In the year 1863 he established a prize, an annual gold medal, for the best work done by a student in Human Anatomy and Physiology. In 1878 he made this prize a foundation, by placing a substantial basis for it as a fund in the college treasury. He also gave liberally for prizes at Gymnastic exhibitions.

In 1869 Mr. Samuel Ward, of the class of '67, gave a prize for class gymnastic work.

To Mr. H. N. Bigelow, of Clinton, Mass., we are indebted for an annual scholarship, awarded from 1871 to 1881, to the student or students who furnished the music for the light gymnastics.

In the year 1873 Mr. J. H. Washburn, of the class of '49, established a liberal prize to be awarded to that class which did the best and most faithful work in the gymnasium, as directed by the department. This award was continued for nine consecutive years. Mr. Frederick Gilbert, of the class of '77, then took it up, and continued it for nine consecutive years succeeding.

In 1876—7 Professor Lucien I. Blake, of the class of '77, performed most efficient service in personal work, by securing funds for the purchase of an athletic field, which field received his name. Much necessary work of a supplementary character was done on this field by Mr. A. N. Bush, of the class of '82. "Blake Field," containing about four acres of land, is still in the possession of the College.

In the year 1879 a legacy from the early friend of the department, Dr. Benjamin Barrett, furnished the college with a fund of $5000, which was to be devoted to repairing the Gymnasium and keeping it supplied with light gymnastic apparatus.

In the same year, 1879, Mr. William D. Ladd, of the class of '78, established the "Ladd Prize" in heavy gymnastics; contributing generously each year for this purpose. The gift is still continued.

In the year 1883, Dr. P. B. Wyckoff, of the class of '68, gave us a complete set of apparatus for testing and examining the eyes of the students; also other delicate physiological apparatus for studying the condition of the physical man. Each year since, also, he has made us a generous contribution for procuring an athletic trainer and for the support and management of our athletic teams.

In the year 1881, Mr. A. L. Williston, of Northampton, established a scholarship of liberal annual income, to be given to those students who furnish the music to their classes at the regular gymnasium drill.

For about twenty-five years from its beginning the department of Hygiene and Physical Education was regarded as an experiment. But when, in the year 1884, Mr. C. M. Pratt, of the class of 1879, one of the friends of the college and of physical education, came forward and furnished us with a complete Gymnasium, we began to feel that the department was no longer in its experimental stage; it had reached assured existence and prosperity. At the time of its completion, our Pratt Gymnasium, as a plant for physical exercise and recreation, was nowhere surpassed; and there was only one other Gymnasium building in the country which equalled it in cost.

The foundations established by Dr. Rufus P. Lincoln, of the class of '62, were other most gratifying evidences that the cause of college physical education had not only taken deep root but had begun bearing fruit. At the commencement of 1890 a document from this friend of the college, placed in the hands of the Trustees, awarded a fellowship of generous annual amount to that student or those students who by vote of the Faculty should be deemed fitted for post-graduate study in this department. In the same year the Lincoln Prize

was endowed for the best class gymnastic work; also the Lincoln Contingent Fund, for procuring rare models of the human body, and for furnishing means to collect and compile anthropometric statistics was placed at the disposal of the Trustees.

In the same year, 1890, Mr. F. B. Pratt, of the class of '87, announced his intention to give to the college new athletic grounds, and to provide for their preparation and appurtenances. As an earnest of this intention, your Body has received a deed of trust of about thirteen acres of land situated within one-third mile of the college chapel. The close proximity of this land to Blake Field and Hallock Park, the latter a large grove of first-growth trees already the property of the college, greatly enhances the sanitary and recreative value of both these pieces of property. For location, suitableness, and outfit, as a place for out-door athletic training and recreation, this field is not equalled, so far as we are informed, in any other educational institution of our country.

As a third notable feature of the year 1890, President Seelye, at the commencement dinner, made to the Alumni the most unexpected and gratifying announcement of the endowment of the chair of Hygiene and Physical Education. This endowment was the gift of the late Hon. Frederick Billings, of New York, and was made in memory of his gifted and lamented son Parmly Billings, a member of the class of '84.

Since the creation of this department a number of alumni and other friends of the College have together contributed nearly $3000 for the purchase of the beautiful and perfect models of the human body made by the late Dr. Auzoux of Paris. Besides these, gifts aggregating more than $12,000 have been made by various persons for furnishing the apparatus of the old and the new gymnasiums. And lastly, the appropriation of nearly $30,000 by the Board of Trustees of the College, makes the whole plant represent at present a total of $177,581.00.

II.

Amherst College was the first institution in the land to make Physical Exercise a compulsory part of an educational course. This she began to do in October, 1861, and ever since has kept the requirement in the curriculum, though with some modification from the original plan. At no time, however, have the students as a whole

been set to high and severe athletic training; the requirement has been only of the minimum amount which a young man may undertake in order to secure and preserve good health.

The plain and severe "old Gym." with little save bare walls and floor, has developed into the warm, comfortable, well-fixtured Pratt Gymnasium, with its abundance of development apparatus, its warm and cold baths, and its appliances for physical measurements. To these facilities are now added the Pratt Athletic Grounds, where for the out-door seasons of the year athletic games and sports may have their full but regulated scope.

In all the forms of exercise, both in-door and out-of-door, there is a continual disciplinary and scientific system to guide, advise, prescribe, and if necessary, compel. Amherst College has thus proved that compulsory physical exercise, as she endows and practices it, is no more an anomaly than is any required mental discipline; only, of course, it must be managed with more flexibility and variety of expression than some other departments of college training.

The object of the department is not to produce an abnormal development of muscles and lungs. Its requirements are of the nature of simple bodily exercises and recreations, in such forms and movements as will keep the body in the best working condition. Thus the plan has been to carry on such a system of Physical Education as for the great majority may secure at once bodily activity and mental enjoyment; and for the few who need it, direction and opportunity to correct imperfect or belated physical development. This is in accordance with the aim of the whole college, which is not to endow any department with the power of turning out monsters or prodigies, of body or intellect, but to develop, educate, enlarge, and purify the whole man, to make him in the broadest sense holy.

In accordance with this aim, a prominent thought running through the whole history of the department is, that its work and care belong to *every man who comes to college.* It has not been the desire to make prodigious athletic records or to train remarkable gymnasts and athletes, *per se;* it has rather been *to give to all the students* the best opportunities for exercise, recreation, and sound physical development. To be sure, we mean to make good records, and to gain the championships as often as we can; but the department does not hold these out as inducements for all. These more brilliant attain-

ments hold the same relation in our department that the exceptional attainments of other departments hold in their sphere. It is only the few who take prizes in Latin, Greek, Mathematics, or Literature; nevertheless, the prize stimulus, the *record*, in the literary and scientific work is directly or indirectly an incentive and inspiration to all the college. We do not expect, nor would we urge, every student to strive for these prizes. But the atmosphere, the impulse, the scholarly aroma, that attends that winning of intellectual honors, elevates the whole college constituency. In the same way the well-developed, handsome form of the all-round athlete, his physical powers of endurance and resistance which will inevitably be imitated as well as admired, are a stimulus of incalculable value to young men.

There is however a plain and self-limited line between him who enters only upon training and him who places himself on the list for the actual competitive struggle. For all save the precious few who are "cautioned" by the department the training is excellent. But the great majority are early ruled out for the final heats by their lack of capacity for competitive work. The daily practice soon settles the question.

Athletic sports and exercise are a natural development of the call of the age for physical education, as well as a progressive attainments from our beginnings thirty years ago. Some evils and excrescences attach to them, of course; but these should be pruned and cut off by judicious treatment; we have no call to cut the tree down to the roots.

The Athletic Association, the Base Ball nine, and the Foot Ball eleven, are organizations which from a very small beginning a few years ago have come to assume such proportions and involve such problems that quite recently it has seemed to the young alumni that rather than go alone as three separate organizations they should all be under one board of general management. To this end, in February, 1890, through the presence and aid of some of the alumni, the Athletic Board of Amherst College was organized and adopted by the college students in a mass-meeting. The Board consists of Mr. F. B. Pratt, three members of the Faculty, the three managers of the Athletic Associations, and three alumni not of the Faculty.

This organization was deemed necessary to aid and direct in raising and expending necessary money, in the control of the new Athletic Field and Buildings, and in some other practical matters.

The result of one year's experience is that a larger sum of money has been raised than ever before, the bills have all been paid at the end of the season, and everything has been conducted on so much more stable and business-like principles that the college and the public in general have been much better satisfied with the standing and conduct of all our athletic affairs.

III.

The physique of Amherst students is altered very considerably from what it was in the sixties. This is evident not only to those of us who have numerical data of physical measurements to judge by, but to any casual observer of the two periods.

The young man now in college has at his entrance less of the simple, flabby, weak appearance than had the young collegian of 1861. He can play foot-ball; he is more ready to stand his ground by his muscle; he is more alert and vigorous in movement. This may be owing in great part to the training he now gets in the Preparatory School which he did not get then. But where did this better preparatory training come from? Did not the influence of a successful experiment reach down from the college? If our preparatory schools are doing good work, whence did they derive the idea of it except from the experience of those who had tried the methods? And is it not with the highest institutions that ideas of progress begin, and from them that they reach downward to be utilized by all that are below, even to the common school of the nation.

There are two facts in our statistical history which illustrate this point. One is the test of actual strength. Almost from the first beginnings of the Department we have possessed and used the two well known and important strength-tests known as the "dip" and the "pull up." These show in each individual, with relative certainty, the muscular power of the trunk and the arms. The records of tests with these instruments applied to all the college, were averaged for the period from 1861-2 up to and including 1888, with the result that the "dip" stood at 6, and the "pull up" at 9. For the sake of comparison we have averaged the same items for the past five college years, and find the "dip" to be 7.1 and the "pull up" 9.9; that is, we register a gain of 9 and 8 per cent. respectively.

Another fact which seems to show the value of physical education to students is found in our record of time lost on account of sickness. Statistics taken from 1861 to 1865 showed that each student, during

that period, averaged a loss of 2.18 days annually during term time from being too sick to study. The records from 1885 to 1889 show an average loss of only 1.75 days,—a gain in health of 8 per cent.

A comparison of the number of deaths in the decennial period of 1861-70 with the number in the decennial period of 1881-90 shows a much greater viability in the latter than in the former decade. The deaths during 1861-70, exclusive of those who fell in the war, were 6.1 per cent. of the whole number graduated; the deaths during 1881-90 were 3.4 per cent. of the whole number. This certainly indicates a greater vitality now than twenty-five years ago.

From the very beginning of our work in this Department a controlling idea has been, the necessity of a standard or ideal toward which to work and from which to estimate. Such an ideal, it is true, we may find theoretically expressed in the high art of Greece in her prime, an ideal that is perhaps the ultimate. There are few young men, however, who can be induced to look up to an Apollo Belvidere or a Hercules Farnesi, with the aspiration to labor for and reach up to this severe height of physical perfection. We have to work with what we find around us; and we *can* ascertain what is the average condition, what the average proportions, of the man of the day, and then give him knowledge and appliances whereby he can certainly improve his condition, to some degree, in his own self.

This has been the constant endeavor of the department for the past thirty years. To find the average or mean condition of the Amherst student, to gather data for a complete and trustworthy induction, has been the rationale of tens of thousands of measurements taken during the last three decades of Amherst College.

As the result of these measurements, carefully collated, we have compiled a series of tables wherein are exhibited what we regard as the standard dimensions of the various parts of the body. Such tables, foreshadowed some six years ago, have not been hastily constructed; investigations made frequently since then have increasingly established their correctness and value. The basis of measurement is the height. It may be laid down as an assured principle that, given a certain height, the various bodily dimensions ought to be strictly and uniformly proportional. Accordingly we have specified some sixty different particulars in which the student should test himself. Every student who comes to us is furnished with these tables, wherein he sees in its various items the standard measurements corresponding to his height, and side by side with these his own measurements

agreeing or disagreeing with the standard. From this comparison both the young man and the department have the data for estimating his bodily powers and condition, wherein he lacks, and what are his possibilities of advancement in physical growth and development. This of course furnishes the basis of watchfulness and advice on the part of the department, and of faithful work and training on the part of the student; attention being given directly to the points where the need exists.

Although much of this statistical work has been published from time to time, through the various reports of the Department, on exhibition schedules, and in the "Amherst Student," it seems best to append a few anthropometric tables herewith. The results exhibited in these tables were obtained in four different ways, and give accordingly, 1. the average of the whole college, 2. the mean of the whole college, 3. the average of all the men of twenty-one years of age, and 4, the Percentile Chart. All the measurements are recorded essentially in the form adopted by the American Association for the Advancement of Physical Education in 1887.

Sickness among the students has always had an important share of the attention of the Department. Whenever a student is so sick that he cannot attend to his duties and requires an excuse for absences, he must notify one of the physicians of the Department,—which one, he himself may choose. He is not required, however, to take their treatment if he desires to employ any other physician. It is of course necessary for the Department to know, during term time, the physical condition of every student; as without such knowledge the sick excuse or advice desired cannot be granted.

The aim of the Department has been to inspire the students with the importance of proper care of the body, to make them value health and vigor. We do not encourage the use of drugs for every trifling discomfort or malady. The student is taught to rely on obedience to the simple laws of health, and to cultivate pluck, courage, fortitude, rather than to coddle himself and run to the druggist or doctor for every ache and ailing. And the students are continually warned against letting the weakness of the body control the mind and soul.

The records of our Department indicate that Amherst College is a healthful place for the student. During the past twenty-five years the sick percentage of the Senior class has been 18.3; of the Junior class 21.3; of the Sophomore class 24.0; and of the Freshman class 23.5; showing from Freshman to Senior years a decrease of more than 5 per cent.

IV.

While in its main tenor this report must devote itself to setting forth the importance of physical training, the Department would by no means set the body above the soul; nor would it, in advocating vigorous athletic training for college students, seek to intimate for a moment that the soul should be placed under the dominion of the body, with its powerfully developed, often uncontrolled appetites, passions and powers. The bodily life it regards not as the master nor even as the rival of the intellectual and spiritual, but rather as the helper. None of the popular fads and fashions of athletism, much less the simple necessities of Physical Education such as the Department exists to provide for, ought to take precedence of the higher part of our nature. On the contrary, we would always give to the intellectual, moral and spiritual the pre-eminence that belongs to them, as defining the end and aim of life. At the same time we recognize in man a co-equal Trinity of Body, Mind, and Soul. The more perfect the harmony among these three, the more free and god-like the man. If one of the factors be weak, the others will triumph over and depress it. And to give to all these elements their just due should be the guiding principle of all who have in charge the liberal education of the day.

The Department now reporting to you would therefore merely urge this claim: that we are looking out with zealous and scrutinizing eyes for the best conditions and advantages to the young men under our charge, that they may be fitted to make the highest possible attainments for the citizenship, the scholarship, the Christian vigor of the days to come. To this end, while the intellectual and spiritual remain paramount, yet in order that these may have their true development the physical man needs to be brought up to and kept in its highest normal condition. It is with this physical preparation, subordinate it may be but still noble and worthy, that the department has to do.

Perhaps this report cannot be better brought to its close than by a specification of what, in our judgment, the strong points of the Department have been.

It had a wise projector. Dr. Stearns foresaw the wants of the College in this Department, and in providing for them wrought not only for his immediate present but for the future.

It has had strong and steady guardianship. When once and again the trial of its strength came, the Trustees of the College held to it

with unfailing support. When in the Board of Instruction the various details of its management have been discussed, a most cordial hearing has always been given to the requests of the professor. When new measures have been proposed, or modifications of method, there has been no need of labored effort to carry them through, though of course they have often required thorough explanation and adjustment to the work of the other departments.

In fine, we fully believe that the self-reliance developed in the young men who have conducted the class-exercises in the Gymnasium and in the body of students who have submitted to them, has been the means of calling out and confirming a stronger manhood. Not only have our captains, directors, and managers felt the responsibility of carrying on the Department, but the peculiar requirements of physical education among us have led the students as a body, and each man individually, to feel that on the efforts, conduct, words, and thoughts of every one rests in its degree the honor of his class and depends our good name as leader of the cause of Physical Education at home and abroad. Had it not been for the loyalty and support of the students our Department would by no means be standing where it stands to-day.

I wish to bring before you the valuable services of Dr. H. H. Seelye, the Instructor in the Department. His duties are not merely those of an instructor in calisthenic exercises and gymnastic work; a large portion of the measurements, also, are made by him, and he is the real physician of the College in cases demanding medical advice and attention. And his thorough early hospital training and daily practice in town render him very efficient to the students in case of accident or disease.

The service and study of Mr. Frank A. Delabarre, the incumbent of the Lincoln Fellowship, have been fruitful of the best results to the Department. The fact that he was college gymnast in 1889-90 has given him the confidence of all the college as an athletic leader and adviser. He has also done excellent original work in comparative Anthropometry, and he has compiled valuable statistics showing the effect of the use of tobacco upon the physical development of our students.

As a supplement to this report, is to be found a list of the friends who with pecuniary gifts have helped to place the Department where it is to-day. The different uses to which this money has been applied are designated under the various headings as seen below.

An anthropometric table is also appended, showing the average measurements of about 2000 students. Another gives the mean measurements of 2086 students. A third is the same representation of those students who were twenty-one years of age. And the fourth presents the items of 2230 students grouped together by the percentile method as proposed by Mr. Francis Galton of London.*

All of which is most respectfully submitted,

EDWARD HITCHCOCK.

Amherst College, Pratt Gymnasium,
June 22nd, 1891.

---

*A gratifying corroboration of our anthropometric methods, ascertained too late to be inserted in the text, may here be appended. We have steadily maintained, against conspicuous opposition, that the true basis for physical measurements is in bodily stature. The truth of this is seen in the statistics of the graduating class ('91), which show that in more than two-thirds of the linear and outline measurements of their bodies the growth of the young men has been proportional to their height.

Gifts and Endowments to the Department of Physical Education and Hygiene in Amherst College between 1860-1 and 1890.

PRIZES AND MEDALS.

Hon. E. H. Sawyer, 1863 *et cetera.* - - -	
J. H. Washburn, Esq., 1873—1882. - - -	
D. S. Herrick, Esq., 1873, - - - -	
Frederick Gilbert, Esq., 1882—1891, - - -	
Wm. M. Ladd, Esq., 1879—1891, - - -	
Samuel Ward, Esq., 1869—1870, - - -	
Dr. R. P. Lincoln, 1890, - - - - -	
	——$4,485

SCHOLARSHIPS.

Henry N. Bigelow, Esq., 1871—1881, - - - -	
A. L. Williston, Esq., 1881—1891, - - - -	
	——$1,500

ANATOMICAL AND PHYSIOLOGICAL MODELS AND APPARATUS AND STATISTICS.

Mr. Charles Pratt, 1878, - - - -	
Mr. E. W. Blatchford, 1879. - - - -	
Mr. W. W. Searborough, 1878, - - - -	
Mr. Leander McCormick, 1879. - - - -	
Dr. John S. Bagg. 1882, - - - -	
Dr. P. B. Wyckoff, 1883, - - - -	
Mr. Henry D. Hyde, 1889, - - - -	
Mr. F. W. Stearns, 1889, - - - -	
Mr. G. H. Whiteomb, 1889, - - - -	
Dr. R. P. Lincoln, 1890, - - - -	
	——$2,831

FUND AND GIFTS FOR GYMNASTIC APPARATUS.

Dr. Benjamin Barrett, 1861 and later, - -	
Mr. C. M. Pratt, - 1886 " " - -	
Mr. W. W. Searborough, 1884. - - - -	
Mr. Frederick Billings, 1884, - - - -	
Dr. P. B. Wyckoff, at various times. - - -	
	——$12,550

THE BUILDINGS.

Dr. Benjamin Barrett, and others,	1861 and later,	
Mr. C. M. Pratt,	1885, - -	
College for Pratt Gymnasium,	- - -	
College for Barrett Gymnasium,	- - -	
		$83,945

ATHLETIC MONEY.

Dr. P. B. Wyckoff,	1883 and subsequently, - - -	$550

THE RUFUS P. LINCOLN FELLOWSHIP.

Dr. Rufus P. Lincoln,	1891, - - - - - -	$300

THE ATHLETIC FIELDS.

Prof. Lucien I. Blake,	1878, - - - -	$ 1,500
Mr. Frederick B. Pratt,	1891, - - - -	20,000
THE PARMLY BILLINGS PROFESSORSHIP.	1891, - -	$50,000
		$177,661

As already mentioned on page 11 of this report, the table on the next page expresses the physical proportions and capacities of the students of the college in different ways. And as each of these are peculiar, and entirely separate in their mode of construction, the great similarity of the result in each case corroborates their truthfulness and enhances their value. The general and common method of obtaining the average measures of all the students is an old and familiar way, and easily understood by everybody. The second method of securing the same result by the doctrine of "means" which arranges all the items in groups from lowest to highest and then expresses the one which has the largest numbers, is a more complete and sure result. To select the men of the average age of all college and then tabulate their measurements is certainly a way which will secure a more than probable standard. This is done in the third column. And the plan proposed by Mr. Galton, of England, to arrange the different measures in such groups as will indicate the per cent. of the whole of a series, and also the combined series, is an enlarged and better method of expressing the doctrine of means as they may illustrate the subject. This is in the fourth column.

To this is added the detailed averages of the growth of the class of '91. The small increase in girth and breadth of head corroborates the idea that the skull attains its growth very early in life, perhaps between eight and ten years of age. And the increase of 0.6 per cent in height seems to strengthen the idea that stature is obtained before twenty-one years of age. But the prodigious gain in the strength items seems to indicate that the methods of physical training as carried on in well regulated Gymnasiums, do bring out the forces of the body in a remarkable degree.

Table of Measurements of Students of Amherst College.

	Averages of 2000 measures.		Mean measures of 2086 students.		Averages of students 21 years old.		50 per cent. of 2230 measurements.	Per cent. of increase in class of '91.
	Metric.	English.	Metric.	English.	Metric.	English.		
WEIGHT,	[a]61.2	[d]**134.9**	64.0	**141.1**	63.1	**138.8**	61.6	**8.9**
HEIGHT,	1725	**67.9**	1720	**67.7**	1726	**67.9**	1724	**0.6**
" Sternum,	1410	**55.5**	1410	**55.5**	1407	**55.3**	1410	**0.7**
" Navel,	1030	**40.6**	1023	**40.3**	1025	**40.4**	1029	**1.2**
" Pubes,	860	**33.9**	860	**33.9**	864	**34.0**	864	**3.3**
" Knee,	476	**18.7**	480	**18.9**	477	**18.7**	476	**0.4**
" Sitting,	903	**35.5**	910	**35.8**	903	**35.5**	905	**1.3**
GIRTH, Head,	572	**22.5**	570	**22.4**	572	**22.5**	569	**0.5**
" Neck,	349	**13.8**	350	**13.8**	356	**14.0**	351	**2.5**
" Chest repose,	880	**34.6**	880	**34.6**	892	**36.1**	884	**3.0**
" Chest full,	927	**36.5**	925	**36.4**	933	**36.7**	925	**1.0**
" Belly,	724	**28.5**	720	**28.3**	725	**28.5**	730	**4.1**
" Hips,	893	**35.1**	890	**35.0**	898	**35.3**	893	**2.4**
" Right Thigh,	517	**20.3**	515	**20.2**	521	**20.5**	514	**3.0**
" Left Thigh,	512	**20.1**	510	**20.1**	519	**20.4**	510	**3.1**
" Right Knee,	361	**14.2**	360	**14.2**	359	**14.1**	359	**0.8**
" Left Knee,	359	**14.1**	360	**14.2**	358	**14.1**	359	**1.1**
" Right Calf,	359	**14.1**	359	**14.1**	350	**13.8**	347	**2.8**
" Left Calf,	349	**13.8**	350	**13.8**	348	**13.7**	345	**2.3**
" Right Instep,	245	**9.6**	240	**9.4**	244	**9.6**	242	**0.8**
" Left Instep,	242	**9.5**	240	**9.4**	243	**9.6**	241	**0.8**
" Upper Right Arm,	257	**10.1**	256	**10.1**	264	**10.3**	259	**6.3**

" U. R. A. Contract'd,	295	**11.6**	295	**11.6**	301	**11.8**	295	**6.4**
" Upper Left Arm,	253	**9.9**	250	**9.8**	259	**10.2**	252	**7.8**
" Right Elbow,	251	**9.8**	250	**9.8**	253	**9.9**	250	**3.5**
" Left Elbow,	247	**9.7**	250	**9.8**	249	**9.8**	247	**3.5**
" Right Forearm,	267	**10.5**	270	**10.6**	266	**10.5**	262	**3.3**
" Left Forearm,	261	**10.2**	260	**10.2**	259	**10.2**	256	**3.1**
" Right Wrist,	166	**6.5**	165	**6.5**	166	**6.5**	165	**0.0**
" Left Wrist,	165	**6.5**	165	**6.5**	165	**6.5**	163	**0.6**
BREADTH, Head,	155	**6.1**	154	**6.1**	155	**6.1**	153	**0.6**
" Neck,	108	**4.2**	110	**4.3**	109	**4.3**	108	**1.8**
" Shoulders,	430	**16.9**	430	**16.9**	431	**16.9**	433	**3.6**
" Nipples,	198	**7.8**	200	**7.9**	200	**7.9**	196	**6.4**
" Waist,	250	**9.8**	250	**9.8**	256	**10.1**	253	**3.4**
" Hips,	323	**12.7**	320	**12.6**	327	**12.9**	325	**1.8**
Right Shoulder Elbow,	373	**14.7**	370	**14 6**	374	**14.7**	373	**1.1**
Left Shoulder Elbow,	371	**14.6**	370	**14.6**	374	**14.7**	371	**0.8**
Right Elbow Tip,	461	**18.1**	460	**18.1**	462	**18.1**	461	**1.5**
Left Elbow Tip,	459	**18.1**	460	**18.1**	459	**18.1**	459	**1.5**
LENGTH, Right Foot,	260	**10.2**	260	**10.2**	261	**10.2**	260	**1.1**
" Left Foot,	259	**10.2**	260	**10.2**	260	**10.2**	260	**1.1**
STRETCH OF ARMS,	1780	**70.1**	1770	**69.7**	1794	**70.6**	1789	**1.3**
HORIZONTAL LENGTH,	1732	**68.2**	1730	**68.1**	1738	**68.4**	1739	**0.6**
STRENGTH, of Lungs,	[a]1.5	[d]**3.30**	1.2	**2.64**	1.41	**3.10**	1.4	**27.8**
" Back,	[a]137	[d]**302**	150	**330**	146	**321**	139	**24.0**
" Chest dip,	[b]6.0		4		7.3		6	**38.0**
" Chest pull up,	[b]9.0		10		10.2		9	**20.5**
" Legs,	[a]166	[d]**365**	175	**385**	172	**378**	169	**26.0**
" R. Forearm,	[a]41.5	[d]**91**	40	**88.2**	41.5	**91.3**	39	**23.7**
" L. Forearm,	[a]38.1	[d]**84**	37	**81.6**	39.5	**86.9**	37	**15.6**
Capacity of Lungs,	[c]3.77	[e]**230**	3.90	**238**	4.23	**250**	3.89	**4.0**

a—Kilos. b—Units. c—Litres. d—Pounds. e—Cubic Inches. All others, Millimeters, and Inches and Tenths.

THE DEPARTMENT.

EDWARD HITCHCOCK, M. A., M. D.,
Professor of Hygiene and Physical Education.

HIRAM H. SEELYE, M. A., M. D.,
Instructor in Physical Education.

FRANK A. DELABARRE, B. A.,
Lincoln Fellow in Hygiene and Physical Education.

CHARLES L. UPTON,
Lincoln Fellow elect.

The Athletic Association.

FACULTY MEMBERS.

FREDERICK B. PRATT, Perpetual Honorary Member.
EDWARD HITCHCOCK, M. D., President.
EDWARD P. HARRIS, PH. D., Secretary.
JOHN M. TYLER, Ph. D.

ALUMNI MEMBERS.

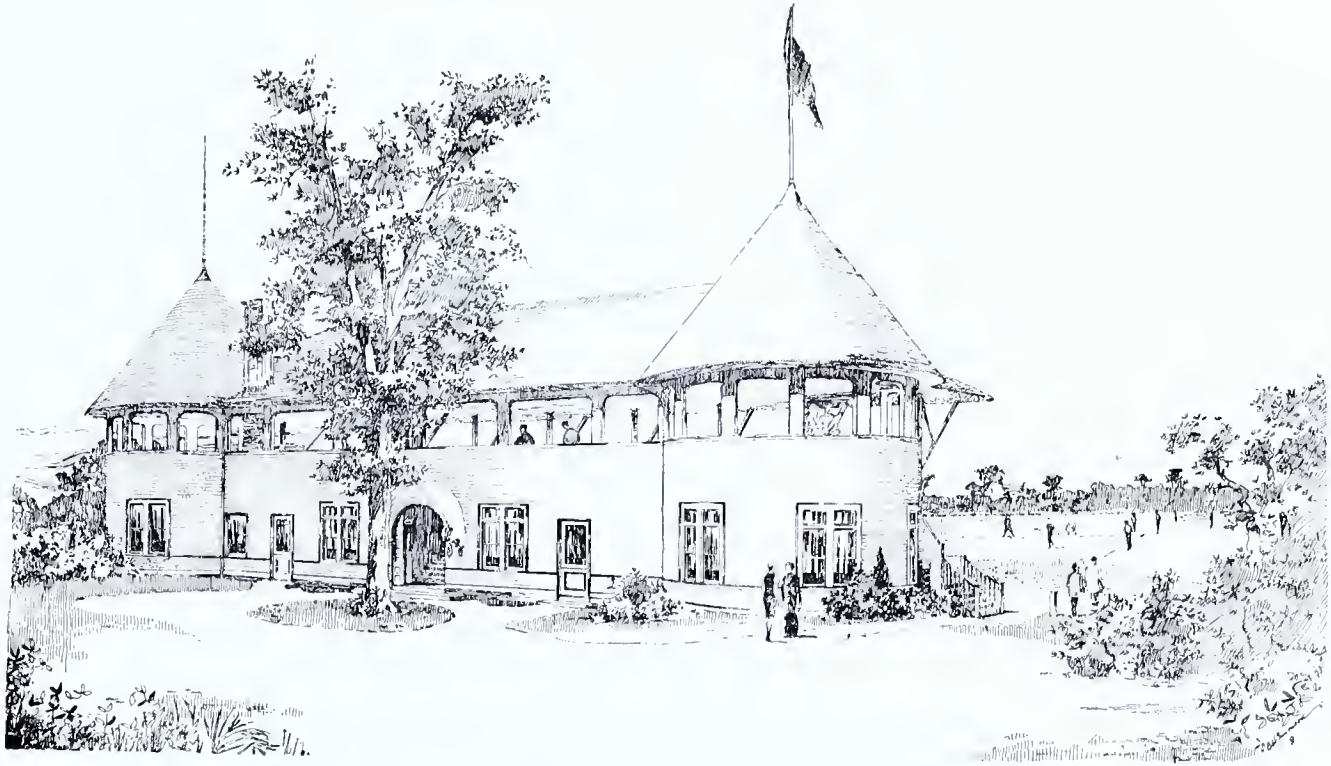
RUFUS S. WOODWARD, '81,
FREDERICK C. TAYLOR, '84,
EDWARD H. FALLOWS, '86.

STUDENT MEMBERS.

CHARLES O. WELLS, '91, Athletic Manager.
JAMES P. WOODRUFF, '91, Base Ball Manager.
WILLIAM F. MCCLELLAND, JR., '92, Foot Ball Manager.

CORNELIUS J. SULLIVAN, '92, Base Ball Captain.
WILLIAM H. LEWIS, '91, Foot Ball Captain.

WILLIAM A. HUNT, Treasurer.



THE GRAND STAND ON PRATT FIELD.

From
"The Handbook of Amherst."

Copyright, 1891.
By Frederick H. Hitchcock.

TO ANY PART OF THE WORLD.

THE HANDBOOK OF AMHERST.

HANDSOMELY PRINTED AND BOUND. PROFUSELY ILLUSTRATED.

A guide to Amherst, and the surrounding charms of the Connecticut Valley, to Amherst College, and to the Massachusetts Agricultural College.

Will be mailed, carefully packed in a heavy envelope, and protected by metal "corners," on receipt of **$1.10.**

Address the maker and publisher,

FREDERICK H. HITCHCOCK,
Amherst,
Massachusetts.

A SINGLE COPY AT ANY BOOKSTORE, $1.00.